



Office of Environmental Health Hazard Assessment

Specific Chemical Agents

Note: Showing these signs or symptoms does not necessarily mean that a person has been exposed to any of the agents listed below.

If you think you have been exposed call 9-1-1.

Based on information from the CDC Emergency Preparedness Office (800-CDC-INFO) and the Agency for Toxic Substances Disease Registry (888-422-8737).

Chemical	Description	Acute Health Effects
Abrin	Natural poison from the seeds of the rosary pea plant. Similar to ricin but more poisonous. Can be in powder form, a mist, a pellet, or dissolved in water.	Difficulty breathing, fever, cough, nausea, and chest tightness. Skin and eye redness and pain. Large doses may cause blood pressure to fall, respiratory failure, kidney failure, and seizures.
Acids	Acids are chemicals that burn or corrode the skin, eyes, and mucus membranes. Can be in powder, liquid, or gas form.	Swallowing can cause mouth and throat pain, vomiting, and abdominal pain. Skin and eye exposure can cause irritation and burns. Inhalation can cause upper and lower respiratory irritation, difficulty breathing, and pulmonary edema.
Adamsite (DM)	An odorless crystalline compound. It can produce a yellow smoke.	Vomiting or diarrhea possible. Inhalation leads to eye, nose, and respiratory tract irritation. Effects have a rapid onset and only take minutes to begin.
Ammonia	A strong base generally found in liquid or vapor form.	Most exposures occur by inhalation. Symptoms include eye, nose, and respiratory irritation. Heavy exposure may cause cough, a suffocation or choking sensation, and difficulty breathing.
Arsenic	Arsenic is a naturally occurring mineral. Inorganic compounds are mainly used to preserve wood. Organic compounds are used as pesticides.	Swallowing can cause severe vomiting, abdominal cramps, and diarrhea, possibly leading to dehydration and shock. Also affects heart rate, mental alertness, and organ function.

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Arsine	A colorless gas with a mild garlic odor. Arsine is formed when arsenic comes in contact with an acid.	Low doses may result in weakness, fatigue, headache, drowsiness, confusion, nausea, and difficulty breathing. Higher doses can cause loss of consciousness, convulsions, paralysis, and respiratory failure.
Brevetoxin	A marine neurotoxin associated with "red tides."	After swallowing, brevetoxin can cause abdominal pain, vomiting, and diarrhea. Nervous system effects include reversal of hot/cold temperature sensation, loss of balance, and trouble moving. Inhalation can lead to coughing and difficulty breathing.
Bromobenzyl- cyanide	An irritant belonging to a class of agents collectively known as "tear gas."	Inhaling or contact with eyes and skin can cause irritation, hacking cough, a choking sensation, and difficulty breathing.
3-Quinuclidinyl Benzilate (BZ or QNB)	Usually disseminated as an aerosol.	Affects anticholinergic pathways of the nervous system. Symptoms might include hallucinations, agitation, dilated pupils, blurred vision, dry flushed skin, changes in heartbeat, and elevated temperature (>101°F).
Carbon monoxide	An odorless, colorless gas that can cause sudden illness and death.	Breathing carbon monoxide gas typically leads to headache, dizziness, and confusion. Symptoms might progress to difficulty breathing, loss of consciousness, and even death.
Chlorine	A gas or pressurized liquid. When liquid chlorine turns to gas it stays close to the ground and spreads rapidly. Chlorine has a distinctive strong bleach-like odor.	Symptoms of exposure include coughing, chest tightness, burning sensation in the nose, throat, and eyes, blurred vision, nausea and vomiting, difficulty breathing, and pulmonary edema.
Chloroaceto- phenone	A component of "tear gas."	Short exposures may cause excessive tearing, burning, and redness of the eyes, runny nose, burning and irritation in the mouth, difficulty swallowing, chest tightness, and coughing. Higher exposures may cause blindness or respiratory failure.
Chlorobenzylide- nemalonitrile	A component of "tear gas."	See Chloroacetophenone, above.
Cyanide	Can be a colorless gas or crystals. Sometimes has an almond smell.	Small amounts can cause rapid breathing, restlessness, dizziness, weakness, headache, nausea and vomiting, and a rapid heart rate. Large amounts can cause convulsions, low blood pressure, unconsciousness, and respiratory failure.
Dibenzoxazepine	A component in "tear gas."	See Chloroacetophenone, above.

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Hydrofluoric acid (HF)	Also known as hydrogen fluoride. A colorless, corrosive gas or liquid. It fumes strongly and readily dissolves in water. The dissolved form is called hydrofluoric acid.	Dilute solutions can penetrate deeply from the skin into the bone. Pain may be severe with no change to the surface of the skin. Breathing the acid vapors might cause difficulty breathing, chest pain, and wheezing. Ingestion can cause vomiting, stomach pain, and bloody diarrhea.
Hydrogen cyanide	See Cyanide, above.	
Lewisite	A type of chemical warfare agent. It is an oily, colorless liquid in its pure form and can appear amber to black when mixed with other chemicals. Smells slightly like geraniums.	Can cause pain and irritation of the skin within seconds to minutes. Redness and blistering follow within hours. Other effects include eye irritation, runny nose, sneezing, hoarseness, bloody nose, coughing, diarrhea, nausea, and vomiting. "Lewisite shock" or low blood pressure may occur.
Mercury	A silvery liquid metal at room temperature. It can form toxic vapors when it evaporates or when heated. The organic form (methyl mercury) is also toxic.	Ingestion might cause profuse vomiting and diarrhea that is often bloody, followed by shock, kidney failure, and possibly death. Survivors of acute poisoning might develop long-term nervous system, skin, and kidney effects, such as memory loss, irritability, tremors, flushing, and peeling of the hands and feet.
Methyl bromide	One of the most widely used pesticides in the world. Used to kill fungus, microbes, and weeds in the soil prior to planting. Primarily for tomato, strawberry, and bell pepper crops.	Methyl bromide poisoning generally occurs after inhalation, although skin contact can also cause symptoms. Causes skin, eye, and mucous membrane irritation, cough, and fluid in the lung. Severe poisoning can result in seizure, coma, and even death.
Methyl isocyanate	Used as an intermediate in the production of certain insecticides and herbicides. A colorless liquid that has a sharp odor.	High exposures can lead to respiratory tract irritation, difficulty breathing, blindness, nausea, sweating, fever, chills, and liver and kidney damage. Pulmonary edema is common. Can also cause loss of vision and cataracts.
Mustard Gas (Sulfur Mustard)	A type of chemical warfare agent. Sometimes smells like garlic, onions, or mustard. May have no odor. It can be a vapor or a clear to yellow-brown oily liquid or solid.	Symptoms might not occur for 2-24 hours after exposure. Can cause yellow blistering of skin, eye pain and swelling, runny nose, hoarseness, bloody nose, sinus pain, shortness of breath, and cough, as well as abdominal pain, diarrhea, fever, nausea, and vomiting.
Nitrogen Mustards	Chemical warfare weapons similar to sulfur mustards. Can smell fishy, musty, soapy, or fruity. An oily liquid, a vapor, or a solid. Liquid at normal room temperature.	Skin redness followed by blistering within 6 to 12 hours. High concentrations can cause eye burns and blindness. Other symptoms include sore throat, shortness of breath, abdominal pain, diarrhea, nausea, and vomiting.

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Osmium tetroxide	A metal oxide used in alloys for instruments, electrical contacts, and light filaments. Can be used to detect fingerprints. A colorless or pale yellow solid with an acrid, unpleasant, chlorine-like odor.	Causes eye and respiratory tract irritation, visual disturbances, headache, cough, difficulty breathing, and dermatitis.
Paraquat	A toxic herbicide with restricted use. Because of its toxicity, blue dye is added to liquid paraquat to keep it from being confused with beverages. An odorant and a agent to cause vomiting are added as extra safeguards again poisoning.	After swallowing a large amount of paraquat, there will likely be immediate pain and swelling of the mouth and throat, followed by nausea, vomiting, abdominal pain, and diarrhea. The following may develop over days or weeks: Liver failure, kidney failure, heart failure, fluid in the lungs, confusion, seizures, coma, fast heart rate, muscle weakness, and respiratory failure.
Phosgene	A major industrial chemical used to make plastics and pesticides. A white or pale yellow gas at room temperature, sometimes smelling like fresh hay.	Immediately after exposure, symptoms may include coughing, burning sensation in the throat and eyes, difficulty breathing, nausea and vomiting, and fluid in the lungs. After 48 hours, symptoms may include difficulty breathing, low blood pressure, and heart failure
Ricin	Derived from castor beans. It can be in powder form, mist or pellets, or it can be dissolved in water.	Initial symptoms include difficulty breathing, fever, cough, nausea, tightness in the chest, and heavy sweating. Low blood pressure and respiratory failure may develop, possibly leading to death.
Sarin	A nerve agent that is clear, colorless, and tasteless liquid that has no odor in its pure form.	The following symptoms may occur within seconds to hours of exposure: runny nose, watery eyes, small pupils, blurred vision, drooling and excessive sweating, cough, chest tightness, rapid breathing, diarrhea, confusion, drowsiness, weakness, headache. A small drop on the skin can cause sweating and muscle twitching on that part of the body. Large doses may result in unconsciousness, convulsions, and paralysis.
Sodium cyanide	See Cyanide, above.	
Soman	A nerve agent originally developed as an insecticide. It is a clear, colorless, tasteless liquid with a slight camphor or rotting fruit odor.	Low doses may result in runny nose, watery eyes, small pupils, blurred vision, drooling and excessive sweating, cough, chest tightness, rapid breathing, diarrhea, confusion, drowsiness, weakness, and headache. Large doses may result in loss of consciousness, convulsions, paralysis, and respiratory failure with risk of death.

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Strychnine	Mainly used to kill rats. A white, odorless, bitter crystalline powder.	Symptoms of poisoning usually appear within 15 to 60 minutes and include agitation, apprehension or fear, being easily startled, restlessness, painful muscle spasms, uncontrollable arching of the neck and back, rigid arms and legs, jaw tightness, and dark urine. High doses may lead to respiratory failure and brain death.
Sulfur Mustard	See Mustard Gas, above	
Tabun	A nerve agent. A clear, colorless, tasteless liquid with a faint fruity odor.	The following symptoms may occur within seconds to hours of exposure: runny nose, watery eyes, small pupils, blurred vision, drooling and excessive sweating, cough, chest tightness, rapid breathing, diarrhea, confusion, drowsiness, weakness, headache. A small drop on the skin can cause sweating and muscle twitching on that part of the body. Large doses may result in unconsciousness, convulsions, and paralysis.
Tetrodotoxin	A neurotoxin from the puffer fish and selected other aquatic species.	Tetrodotoxin works on the central and peripheral nervous systems causing numbness, tingling, loss of sensation and coordination, and weakness.
VX	A chemical warfare agent. Odorless and tasteless. An amber-colored oily liquid that is very slow to evaporate.	Same symptoms as Tabun, above.
Warfarin	Used as an anticoagulant and rat poison. It exists as colorless crystals and is almost insoluble in water.	Prevents the blood from clotting properly. High doses can lead to blood in the larynx, trachea, or lungs. This blood has a salty taste and is bright red and frothy. Poisoning can also lead to excessive bruising, bleeding from nose and gums, blood in urine and feces, and hemorrhagic shock.

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